

Quarterly Report – Public Page

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Prepared for: *US DOT*

Project Title: *Development of an Industry Test Facility and Qualification Process for ILI Technology Evaluation and Enhancement*

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Public Page Section- This section contains information on the technical status of the Project and the milestones completed during the quarter. Information will be information that PHMSA may release to the public in whole or in part at any time. The information must not contain proprietary data or confidential business information. The Team Project Manager must provide a point of contact for coordination, preparation, and distribution of any press releases.

Results and Conclusions:

ILI Vendor Participation

Commitments for project participation have been received from all participating ILI Vendors confirming their support of the program. To-date all ILI service providers have participated fully.

The ILI Vendors have been providing review and commentary on the ILI testing protocol and test specification. Formal contracting with the ILI vendors for participation in pull test trials is complete for two vendors and is being discussed with others.

As outlined in the pull test protocol developed for this project, an overview letter was assembled describing the scope and nature of the trials that will be completed and to inform the ILI Service Providers of the objective and scope of the inspection. This information recapped previously communicated information and provided new data.

The NDE-4-F pull trial program includes 2 pipe pull strings. The pipe strings are assembled by bolting together flanged pipe segments, each nominally 40-ft long. The pull trials will proceed in three stages, as follows:

1. Facility Commissioning – A magnetic segment (no sensors required) and cleaning tools are pulled as part of the system testing program. Commissioning (see below) has been completed on 24-inch and 16-inch diameter pipe segments. The support of 3 participating ILI Service Providers was arranged for these pulls, completed 26-29 May 2015.
2. Blind Trial – No additional prior information about the test string pipes and features, other than that provided below, will be provided to the ILI Service Provider before the trial. These trials are scheduled for September 2015 with the specific dates to be confirmed with the ILI Service Providers.
3. Repeat Trial – After having received and reviewed the results of the Blind Trial and limited validation data following principles of API 1163, the ILI Service Provider will be offered an opportunity to repeat testing. The test dates will be selected to be mutually acceptable to the ILI Service Provider and PRCI. These trials are scheduled for October 2015 or later with the specific dates to be confirmed with the ILI Service Providers.

The ILI Service Providers will complete their analysis and prepare a report on the features identified in the pull test after the trials at their respective offices. It is proposed that the ILI service providers will report the result of their inspection no later than 3 weeks after the pull test. The report format will be agreed with the NDE-4-F project team and will be expected to follow standard commercial reporting practice.

The ILI tools will come equipped with forward and rear attachment rings for the pull rope and retrieval rope; details have been provided and the shackles are arranged.

A full-day workshop at the TDC has been proposed for September, run concurrent with the first trials. The workshop and pull trials will be open to PRCI Operating company members and US DOT.

Pull Test Facility Design

The contractor completed the fabrication and construction of the test facility works and the assembly of the pipe test strings for 24-inch and 16-inch inch diameter pipes with fabricated and natural (i.e. removed from service) metal loss and mechanical damage features. The figures below provide some illustrations of the work completed in support of the project.



Figure 1: View of Pull Test Winch System and Assembled Pipe Test Strings



Figure 2: Assembled Pipe Test Strings (12-inch, 16-inch and 24-inch)

Pull Test Commissioning

An Operation Guide was prepared to define the procedures associated with operating the TDC facility for pull testing. The guide defines the roles and responsibilities of personnel involved in the pull testing; identifies the preventative and regular maintenance task activities; identifies health and safety items for awareness; and, describes the steps required for executing testing.

Commissioning was completed with the assistance of three ILI Vendors, who supplied a 24-inch magnetizer body; a 16-inch ILI tool for pull testing; and, a 24-inch brush tool. A 16-inch brush tool also was procured by PRCI.

The figures below illustrate some of the commissioning activities completed. A commissioning report will be completed subsequently. Test data collected will be reviewed. In general, the commissioning was completed successfully and the capabilities of the winch test system, in terms of capacity and safety systems, were demonstrated. The Operation Guide has been updated with lessons learned during the commissioning.



Figure 3: 24-inch Magnetizer Body Loaded for Testing



Figure 4: Loading the 16-inch ILI Tool for Testing



Figure 5: Winch Test System

A gauss meter is important for MFL as part of the test protocol. It was identified that Vendors typically make and supply their own equipment. The team reviewed details of a gauss meter equipment and actioned the purchase, to be used for the trial.

Pull Test Winch System

After completing the fabrication and assembly, the winch test system was delivered to the TDC facility April 13 and lifting was completed without issue. Photographs showing the winch test system installed at the TDC are shown below.

Commissioning activities demonstrated that the winch capacities with respect to line force and line speed are achieved successfully. The safety systems integrated into the winch design also were demonstrated and include maximum load limit and stopping limits. The test parameter input procedure was shown to be straightforward.

The winch test system was provided with the final maintenance manual and documentation. The operation manual will be updated based on lessons learned during the commissioning. A list of preventative maintenance activities has been included with the Operation Guide.

The design for a canopy fixed to the winch platform, covering the diesel engine and the hydraulic oil tank has been prepared and submitted for quotation.

An additional operator training session was conducted in August to ensure flexibility for scheduling future trials.



Figure 6: Pull Test Winch System Lifting at Delivery



Figure 7: Pull Test Winch System on Installed Rails



Figure 8: Pull Test Winch System showing Operator Cabin

Inventory and Sample Characterization

A sufficient number of pipe samples with corrosion and mechanical damage features have been secured and characterized at the TDC facility to support pull testing. Additional samples are being received and characterized to provide a greater variety of pipe diameters and feature geometries to enhance the scope of ILI performance trials.

The pipe samples were characterized and two test strings were assembled. The pipe string sample characterization data was used to develop the truth data for the ILI system performance trials. The truth data is being held confidentially by PRCI.

A Houston machine shop was selected to prepare the joints with machined defects using 16-inch and 24-inch diameter 40-foot pipe joints. The completed 16-inch pipe joint was delivered to the TDC in August; the 24-inch will be delivered early September.

The draft standard for test specimen characterization has been completed and circulated for comment.

Sample NDE-4-F trial program data records are being developed to explain the data being delivered and the distribution process.

Test Protocol Development

The testing protocol (third revision) was completed, incorporating feedback received from operators and ILI Service Providers.

The Pull Test Facility operating guide has been prepared and delivered. This guide is being harmonized with PRCI Technology Development Center (TDC) general operating and safety procedures. This guide and related procedures were reviewed and updated as part of training and commissioning activities.

A description of the pull test has been forwarded to the ILI Service Providers so they know what to expect in terms of features, allowing them to make decisions about what tools they will supply and the availability. The pull test will include 24-inch and 16-inch pipe specimens. Each test line will include a machined metal loss feature set including sizes recommended by the POF standard for ILI system qualification.

Plans for Future Activity:

Continued development and enhancement of the TDC pipe sample database system.

Test specimen fabrication will be completed with the finished 24-inch joint delivered to the TDC in early September.

Complete evaluation trials and develop trial report in September 2015.